

CLAIMS

1. A light-receiving element array for receiving light beams demultiplexed every wavelength from a wavelength multiplexed
5 light beam and arranged in a straight line, comprising :

a plurality of light-receiving elements for monitoring signals, and

a plurality of light-receiving elements for monitoring noises,

10 wherein the light-receiving elements for monitoring signals and the light-receiving elements for monitoring noise are alternately arrayed in a straight line the direction thereof is the same as that of the arrangement of the demultiplexed light beams.

15 2. The light-receiving element array according to claim 1, wherein the light-receiving elements for monitoring signals and the light-receiving elements for monitoring noise are consisting of pin-photodiodes, respectively.

20 3. A light demultiplexer, comprising:

a light-receiving element array according to claim 1 or 2 for receiving light beams demultiplexed every wavelength from a wavelength multiplexed light beam and arranged in a
25 straight line,

wherein the signals and noises are separated to be monitored by the light-receiving element array.

4. A light-receiving element array for receiving light beams
30 demultiplexed every wavelength from a wavelength multiplexed

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light beam and arranged in a straight line, comprising :

a first row of light-receiving elements arrayed in a predetermined pitch and in the same direction as that of the arrangement of the demultiplexed light beams, and

5 a second row of light-receiving elements arrayed in the same pitch as the predetermined pitch and in the same direction as that of the arrangement of the demultiplexed light beams,

wherein the first and second rows of light-receiving
10 elements are arrayed with one-half pitch shifted in an array direction.

5. The light-receiving element array according to claim 4,
wherein the light-receiving elements are consisting of pin-
15 photodiodes, respectively.

6. A light demultiplexer, comprising:

a light-receiving element array according to claim 4 or
5 for receiving light beams demultiplexed every wavelength
20 from a wavelength multiplexed light beam and arranged in a straight line,

wherein the demultiplexed light beams are monitored by the light-receiving element array.

25 7. A method for aligning light-receiving element and demodulated light beams in a light demultiplexer including a light-receiving element array according to claim 4 or 5 for receiving light beams demultiplexed every wavelength from a wavelength multiplexed light beam and arranged in a straight
30 line, the demultiplexed light beams being monitored by the

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an n-type semiconductor layer, an i-type semiconductor layer and a n-type semiconductor layer stacked in this order on a n-type semiconductor substrate,

a p-type region which is formed by diffusing partially p-type material into the n-type semiconductor layer which is an uppermost layer,

a p-type electrode provided on the p-type region, and

5 a common n-type electrode provided on a bottom surface of the n-type semiconductor substrate.

11. The light-receiving element array according to claim 9, wherein the pin-photodiode comprises :

10 an n-type semiconductor layer, an i-type semiconductor layer and a p-type semiconductor layer stacked in this order on a n-type semiconductor substrate, the p-type and i-type semiconductor layers are isolated by an isolating trench from the adjacent p-type and i-type semiconductor layers,

15 a p-type electrode provided on the p-type semiconductor layer, and

a common n-type electrode provide on a bottom surface of the n-type semiconductor substrate.

20 12. The light-receiving element array according to claim 10 or 11, wherein the p-type electrode of the electrode shorted light-receiving element is shorted to the common n-type electrode.

25 13. The light-receiving element array according to claim 10 or 11, wherein the p-type electrode of the electrode shorted light-receiving element is connected to one common metallic wiring which is shorted to the common n-type electrode.

30 14. The light-receiving element array according to claim 8 or

9, wherein the element area of the electrode shorted light-receiving element is smaller than that of the light-receiving element for monitoring a signal.

- 5 15. The light-receiving element array according to claim 8 or 9, wherein the light-receiving surface of the electrode shorted light-receiving element is provided with a light shielding film.

- 10 16. A light demultiplexer, comprising:

a light-receiving element array according to claim 8 or 9 for receiving light beams demultiplexed every wavelength from a wavelength multiplexed light beam and arranged in a straight line, and

- 15 wherein the demultiplexed light beams are monitored by the light-receiving element array.

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